THE REVIVAL OF PHYSICAL EDUCATION AND PRACTICAL HYGIENE.*

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DR. OSLER, of the Johns Hopkins Faculty, recently told a popular audience that a desire to take medicine is perhaps the great feature which distinguishes man from other animals. His plea was that our patients shall follow suit in the advance taken by the profession, and accept the prescription of a "little more exercise, a little less food and a little less tobacco and alcohol"—in brief, evince a greater reliance upon what constitutes the fundamental part of our Art, outside of surgery, viz., the precepts of hygiene and dietetic science. Voltaire wittily defined the physician to be an unfortunate gentleman expected every day to perform the miracle of reconciling health with intemperance; and Addison realized that physic, for the most part, is nothing else but the substitute of exercise and temperance. "A man may boast that he has learned how to evade nature's laws," says Emerson, "but the brag is on his lips—the conditions are in his soul." When I read in a modern magazine the charge that "physicians are too busy studying disease to pay any attention to health, and that in learning the nature and effect of remedies there results no time or inclination to learn the laws by which remedies would be rendered useless," it seems evident that the doctor's etymological rôle of teacher, and the *physician's* province of expounding the *nature* of *health* may be resumed, and entered upon, with advantage.

Galen declared him to be the best doctor who is the best teacher of gymnastics; and, as he became physician, or medical director we would now say, to the gladiatorial school of his native town, after eleven years of study, may it not have been this experience (?) which was the foundation of an influence dominant for thirteen hundred years after his death ?

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A certain Herodicus was "so famous for his application of gymnastics to the improvement of health that Plato accused him of doing an ill service to the state by keeping alive people who ought to die, because, being valetudinarians, they cost more than they were worth to the community."

"Physical culture in theory is the obtaining and maintaining of a properly-formed, healthy body; in practice, *right conduct about food, (clothing), activity and rest.*" On this broad platform, hereafter, the specialist in health may minister to the great masses, and especially to the growing youth in homes, schools and colleges, as a sort of Medical-Extension Corps, and so educate the public and themselves in the great, basic facts of living—casualties aside—free from ordinary sickness, and dying at the call of that honorable (but infrequent) messenger of death, Old Age. "This world is not yet prepared, so far as we know," says a writer, "for the activities of bodiless spirits. The first thing is to develop a firm, healthy body, strong muscle, pure blood, a clean, mucous membrane—such conditions would base a soul upright and free." Hope, sunshine and fresh air have never been supplanted as tonics; and along with diet and medication, regulated exercise, and its correlative, rest, calls for the same therapeutic respect in the prescriptions of the careful practitioner. Joining a gymnasium or an athletic association, *per se*, as remedial measures for the sedentary, weak or semi-invalid, is a species of polypharmacy—the administration of a crude drug in place of the purified and isolated extract—active (athletic) principle, if you please. Of exercise, as of dieting, it may be said, *mutatis mutandis*, in the language of the famous Code of Salernum:

> "Doctors should thus their patient's food revise:
> *What* is it? *When* the meal, and what its *size?*
> How *often? Where?* lest, by some sad mistake,
> Ill-sorted things should meet and trouble make."

Believing that, in the Swedish Educational Gymnastics, this physiological refinement of bodily exercises has received the most attention, I have ventured, in the present paper, to bring to your notice, more especially. some of the distinguishing features of the same. In what follows, it is not my purpose to speak of Swedish medical gymnastics—an altogether distinct branch—but to refer to educational exercises simply. It has been well charged against the usual athletic work of schools and colleges that it does not reach the very class most in need of bodily development, viz., the more studious and sedate element, who have no desire to pursue sport as an end in itself, such as winning a prize or breaking a record or being known as an athlete. The worship of muscle appertains rather to the prize-ring, and exhibitions of strength and prowess introduce, with quite a doubtful advantage, the claims of physical training in a university course. We want in America to-day a sensible enthusiasm or ambition for good health by rational living! Sir James Paget says: "I should like to see a personal ambition for renown in health as keen as that for bravery or for beauty, or for success in athletic games and field sports. I wish there was such an ambition for the most perfect national health as there is for national renown in war, or in art or commerce."

What, if physiological laws are as sacred as moral laws, in their own proper sphere, and mankind as truly bound to obey them? "Holy and healthy are synonymous terms," admits that arch-dyspeptic, Carlyle, who thus philosophizes: "The healthy know not of their health, but only the sick. The true Peptician was that countryman who said, 'for his part, he had no system.' A state of health is denoted by a term expressing unity—when we feel ourselves as we wish to be we say we are *whole*. Had Adam remained in Paradise there had been no anatomy and no metaphysics." So much for infraction of known laws in the physical decalogue.

Let me call the attention of those interested in the Swedish idea of physical education to a treatise entitled "The Gymnastic Progression," by Claes J. Enebuske, Ph.D., of the Boston Normal School of Gymnastics, to whom the writer is indebted for his practical instruction in the system. I cannot do my theme better service than to quote the following analysis, as he gives it:

"The functions of the heart and lungs are the fundamental functions of the body. It is the aim of Swedish educational gymnastics to develop these fundamental functions, and it endeavors to attain this end by a series of movements of the voluntary system, which shall be so arranged and executed as to bring about a healthy response between the muscles and the will. It does not strive to develop physical specialists, but only to train the different organs of the body in a manner that may serve the great double purpose of promoting the efficiency of the circulatory and respiratory functions, and of increasing the volitional control of the whole body. Throughout the entire course, the Swedish system of gymnastics proceeds upon the well-grounded theory that muscular strength must follow as the necessary consequence of a training so carried on as to promote the health and strength of these fundamental functions. Theory and experience show that a system of training may be followed which, while it develops muscular strength to a considerable degree, at the same time causes dilatation of the heart and lung-cells, consequently making their walls thinner and weaker. Upon such a training, common sense stamps the seal of disapproval. Get the heart and the lungs right, and the muscles will meet every reasonable demand. This is the teaching of experience. . . . 'The gymnastic days' order' is composed of a certain number of movements succeeding each other in a well-defined order, calculated to produce certain effects in a certain succession, all these movements together being designed to bring about a distinct hygienic and educational result. Students and brain-workers generally, from the conditions of their life, present a more or less temporary passive congestion, or tendency to such congestion, of the brain and abdominal organs, decreased respiration and the mind tired from prolonged concentration. The first object of the gymnastic drill must be to counteract these evils, to relieve the brain and oppressed organs, to reinstate a healthy respiration and circulation, to tone up the body generally.

"First, '*order movements*' call attention to that fundamental position and carriage best suited to the physiological interests of the body, from which all correct gymnastics start, and to which they return before a relaxed position of rest is resumed. Then a class called '*leg-movements*' intended to draw the blood in large quantities down towards the lower extremities, thereby relieving the brain and the oppressed organs. These also stimulate the general circulation. Next follow movements called '*strain-bending movements*' and '*heave movements*,' which expand the chest and induce deeper and more energetic respiration. The combined result of these four typical gymnastic movements in the order mentioned is this: More and better oxygenated blood is carried to the muscles, and the veinous drainage correspondingly facilitated; the mind is relieved from its previous strain and the will is concentrated upon the muscular response. These results unite to form a most favorable general foundation upon which to ground the following more specific movements: '*Balance movements*,' which bring about a co-ordination of muscular contraction in all parts of the body, and by demanding equilibrium in difficult positions, train the sense of upright and graceful posture.

" '*Movements for the back*,' which correct the shoulder-blades and back, and, by equalizing the strength of the muscles on both sides of the vertebral column, counteract faulty growth of the spine; *movements for abdomen* and *forepart of the body*, which stimulate the abdominal organs by an alternating increase and decrease of the abdominal pressure. The movements strengthen the muscles of the abdominal walls, as do also the next following, called the '*alternate side movements*.' These last train the legitimate mobility of the ribs and vertebræ, and mechanically stimulate the spinal nerves. These movements are performed with gradually increasing force, compelling stronger and stronger action from the circulatory and respiratory organs, but never exceeding a certain point, the *optimum*, the test of which is a deep, free, undisturbed respiration during the movement. Whenever the extreme limit is approached, as shown by breathlessness and uncomfortable heart action, the effects are immediately moderated by administering movements that quiet and normalize respiration and heart-action. By these movements the system is prepared for the next following. These are the more vigorous exercises of running and jumping, which culminate the day's order, after which the accelerated action of the heart must be normalized and the body prepared for rest. This is accomplished by slow, measured '*leg movements*,' accompanied by deep, rhythmic breathing movements."

The above lengthy quotation must suffice, by way of description, to show that the Swedes have wrought out a truly scientific system, simplified and classified all the possible benefical movements of the body through its different members, and presented a rational, practical and economical plan of bodily education ; a basis on which our American method will yet be founded. "The exercises, not the apparatus, constitute the system, and the movements can be taken anywhere where there is sufficient floor space to stand on and sufficient oxygen in the air," with the adaptation, at times, of ordinary chairs and desks, or other furniture.

It is known to many that the Swedish system is now being introduced into the public schools of Boston, under the supervision of Dr. Hartwell, assisted by Mr. Nissen, and a demand for teachers has now come to one school from fifteen New England towns. There are also applications from Kentucky—a college and private school—and also from California, Virginia, and the middle West. Atlanta has promptly entered the field in her public school course. Baltimore is peculiarly fortunate in the excellent opportunities offered for scientific and bodily training at the Woman's College and the Bryn Mawr School for Girls. The Normal School has also its drill of part Swedish and part Delsarte exercises, and all these institutions are doing commendable work of great promise to the young women of our community. Thus, gradually, is the conspiracy against girlhood being broken. To the dress-reform movement of the day a meed of tribute is also justly due, for at the basis of all the physical possibilities of the sex lies a rational, unfettered costume. "In spite of the abuse in the use of clothing to which most women have subjected themselves for centuries," says Dr. Sargent, "I am glad to be able to state that the typical woman, as shown by several thousand measurements in my possession, is not quite so ugly in her lines and contour as the dress she often wears would lead one to infer." If, among other fallacies which are constantly being exploded as to what women can and cannot do, in both the physical and mental realm, should be added the belief that her attractiveness is in any way enhanced, or her comfort and elegance maintained, by wearing the inane, inartistic and often indelicate corset, then the gymnasium will readily have accomplished a feat hitherto denied to the most vigorous philippics of the medical profession.

Thinking it would be of interest to some to know how women have taken up this new occupation, and with what success they are meeting as teachers, I have obtained the following data relative to the Normal School with which I am most familiar, for there are now five leading schools for physical education in the country:

"Whole number of pupils (men, women and children) for 1890 and '91, 465, of whom 401 were women and children; whole number of normal pupils, 39, the standard requiring the rejection of 27, chiefly on account of insufficient mental training, though several were physically incompetent. The *personnel* of the class includes three full graduates of Smith and Wellesley Colleges and Boston University; also fourteen Normal School graduates, while no one is received who has not the equivalent of a full high-school training and is free from any organic disease or serious functional disorder. The course, lasting generally two years, includes the instruction given during the first year of a graded medical school in Anatomy, Physiology, Hygiene, etc., and will be broadened by the subsequent addition of Anthropometry, Pedagogy, and studies in applied Physics and Chemistry.

About one-third of the class are taking medical gymnastics, not to become practitioners, but safer teachers of educational gymnastics." Graduates are now receiving from $60 to $100 a month for their services, and the demand is greater than the supply. Vassar, Smith, Wellesley and Mt. Holyoke Colleges have well-organized physical departments, working on scientific principles, with an educational and hygienic aim. None are, however, better equipped than the two of which our city may justly be proud.

At the last meeting of the American Association for the Advancement of Physical Education, held in Boston in April, Rev. Dr. Hyde, President of Bowdoin College, made the following excellent points in explaining the status of physical training, as he believes it should be in our American colleges:

"1. That exercise is best which reaches the largest number and does most for the weakest men.

"2. That exercise is best which makes the hardest work attractive.

"3. That exercise is best which most coördinates body, will and mind.

"Ninety per cent. of our students are not reached by athletics. The question is not, What can be done with the apparatus, but, What can the apparatus do for the young men."

He realizes practically that mind and body stand together in the closest correlation, and gives this branch of education its just *academic recognition*. "It is made one full study and is obligatory upon every man. To it is given one-thirteenth of the whole time devoted to the college course, and regular and faithful attendance is necessary for graduation. A carefully prepared 'athletic and scholarship table,' giving the standing of 153 students, showed that excellent physical development is compatible with the highest mental development. Professional and mercantile classes especially need the physical education, systematic scientific training will give them. It trains the student to find pleasure in the right things; they become less noisy, better able to fix attention, and less boisterous in play and fortified against animalism and sensualism. Amherst and Haverford are conducted on the same principle. The instructor in these institutions should be a medical man, and a college graduate by preference, so he may the better command respect; and he should rank as a full professor, and be paid accordingly."

Dr. Seaver, of Yale, in examining the Academic freshman class of the year, found, out of the 260 men "about thirty whom he termed in bad physical condition, about 75 in fair condition, fully 100 in good condition, and the remainder, about 55, are rated as first-rate in health. The latter class are men who have had athletic training before, mostly in the preparatory schools." Inasmuch as the critical periods of growth are passed during school life, how necessary does it seem that trained and qualified physical supervision should be added to the public school régime.

Jean Paul, in his quaint way, says, "each generation of children begins the history of the world anew. The schoolhouse of the young soul does not merely consist of lecture and lesson rooms, but also of the school-ground, the sleeping-room, the eating-room, the play-ground, the staircase, and of every place. What intermixture of other influences always either to the advantage or prejudice of education! In revising a scheme of education, G—— had chosen that more attention should be paid to bodily health than to mental superfœtation; he thought the tree of knowledge should be grafted with the tree of life. Ah! whoever sacrifices health to wisdom has generally sacrificed wisdom too, and only *inborn*, not *acquired*, sickliness is profitable to head and heart."

Dr. Seaver writes that "the child should come under the care of an experienced physical director from the day of entrance to regular school life. A physical examination should be made that should determine the condition of heart, lungs, spine, muscles, skin, eyes and ears. Many a case of incipient disease that eventuates in disaster would be discovered and put in the care of a physician, if necessary, or a correct regimen of diet, sleep, exercise, etc., inaugurated, with the aid of the parents, that would counteract the tendency to disease or deformity and save the child as a useful member of society. Countries abroad, with far less financial resources than our own, such as Switzerland, Germany, Sweden, Denmark, France and Italy have long since taken such a step"—and there is a public school for girls in Massachusetts, where a somewhat similar examination prevails.

The *Sun*, in a recent editorial, called attention to the unsatisfactory results attending military instruction in colleges; and it is a very significant fact that Dr. Charles R. Greenleaf, Lieutenant-Colonel and Surgeon, U. S. A., was specially detailed by Secretary Proctor to attend the meeting in Boston and read a paper on Physical Training in the Regular Army, in which he spoke of the necessity of supplementing the drills and manual of arms by more complete and systematized gymnastic exercise. The outgrowth of his visit was the appointment of a committee to urge upon Congress the authorization of a professorship of physiology, hygiene and physical training at the U. S. Military Academy at West Point. Gymnasia have been erected at many outposts, and it is intended to use the revenue from the canteen fund for their support.

Dr. Wey's successful labors in effecting mental and moral progress through physical training of youthful criminals at the Elmira Reformatory is another most interesting phase of this movement. He believes that "the primary education of many criminals and defects should be the education of the body and the building up and strengthening of the brain. To force or develop a brain whose habitation is attenuated and architecturally inharmonious, whose nervous system is vitiated, is to produce a mental dyspeptic—to cram the mind with scholastic lore and moral platitudes in excess of its physical strength. First, let the scheme of training or reformation embrace the bringing to the highest attainable degree of perfection the physical man, and coincidently the brain will participate in the work of physical improvement. . . . The work of physical education, to be successful, should be carried on along a three-fold line; muscular amplification and structural enlargement, not mere increase in size but increase in structure, to arrest defects transmitted or acquired through environment or defective modes of living; the bath (Turkish), as a stimulus and means of bringing the various members of the body into greater harmony; and a dietary suitable to supply energy of the kind best adapted to the adjustment of mind to body."

I cherish the hope that physical training, which has thus risen to the dignity of preventive medicine, will prove a helpful resource in the development of the *feeble-minded* brain. Plato said to train the mind and neglect the body was to *produce* a cripple. More and more is it being appreciated that "mental development begins with and depends upon purely physiological processes. Dr. Seguin wanted a way into a dormant mind, and found it through "The Training of an Idiotic Hand." The occupations of the kindergarten represent a successful approach to this lethargic and unquickened realm. Permanency of result necessitates structural improvement. It is easier to act upon the centers from the periphery than upon the periphery from the centres [Seguin]. Physical training has proved itself in the case of youthful criminals and dullards "an end to cerebral activity and mental increase." Mental development and culture ignoring the fact of a physical basis soon resolves itself into a study of pathology and morbid anatomy [Wey]. The test of the "good and faithful servant" specifies the comforts and help accorded the *physical* man in distress; moralizing seems a better application afterwards.

There is abundant evidence that our disdainful brains are largely indebted to the muscles for their start in life, and that there is a distinct order in which the various motor centres develop through outside stimulus; and presumptive proof that these transmitted stimuli not only lead to increased central growth, but may affect continuous motor areas. The researches of Dr. Wilmarth, of Elwyn, Penn., on the microscopic, and other, conditions found in feeble-minded brains (a report of 100 cases), temper one's enthusiasm somewhat, but what else can you invoke in behalf of these defective ones than aids to improved nutrition and circulation?

To such as have faith in physical methods, commends itself, in my judgment, a trial of the Swedish educational gymnastics, and I am glad to have the encouragement of Dr. Fort's institution, near Ellicott City, Md., where this system is now being introduced.

In conclusion, what of the influence of this awakening in bodily culture on the profession? Is it not an opportunity to insist more and more in our practice that "there is only one rational method of treating the sick, and that it consists in so relating the individual affected to the cause of his disease as to make him not only intelligent on the subject, but at the same time conscientious concerning it?"

The sanitaria of this country are doing an effective work in thus stimulating an enlightened public conscience. These were the first temples of Æsculapius, and are to-day renewing their youth under the best medical auspices.

The great question of the future is more and more tending to the prevention of disease. Hygiene and sanitation are opening the way. Brilliant as is the most recent discovery in bacteriology, its illustrious author would probably be the first to admit, in the words of another, that "exactly the kind of cases most likely to be benefited through its means have long since been known to be greatly improved and often cured by hygiene and dietetic treatment."

Let us invoke, first, the natural germicidal and antiseptic powers of healthy tissues and normal functions. A hopeful writer classed the tuberculoses among the preventable diseases, and says, "fresh air and an abundance of it, the increased capacity of the chest, the disinfection of the products of disease thrown off by its victims, the inspection of animals and of meat, the application of sufficient heat to all foods—those are the agencies which will, eventually, lessen the ravages of the 'bacillus tuberculosis.'" Foods, habits and other incidents of life, being daily and constant, must exert a far greater influence on constitutional tendencies than medicine or treatment which are occasional and varying. The man who improves on food products, ventilation, methods of exercise, etc., will thus confer the greatest benefit on the community.

The combination of science and popular experiment, represented by the work in Boston of Mr. Edward Atkinson's food laboratory and the New England Kitchen, is of the highest importance to every physician and practical philanthropist; for it does not seem likely that either will ever be independent of the problem of nutrition in their labors for the maintenance of health, the cure of disease, or the social and moral amelioration of the poor and afflicted.

"For the first time, it is believed that standard dishes, one of which is beef-broth for invalids, have been prepared on scientific principles with such exactness that they may be duplicated in every particular, like an apothecary's prescription."

If, with renewed investigations into sanitary chemistry, the future shall bring us those data on which an exact science can be based, and emphasis be laid on the sacredness of physiological laws and the duty of bodily training, then the importance of the physician to the State will be better realized and the era of preventive medicine more acceptably inaugurated.

A CASE OF TRAUMATIC EPILEPSY.

In the "Medical Record," March 28, 1891, J. E. Courtney, M.D., presents the following: A child, aged four months, fell a distance of fifteen feet striking on her head. The injury seems to have been an inversion of the bones forming the posterior fontanelle. No fits occurred until the age of five years, when she was struck on the head. At this period epigastric aura and petit mal appeared. There was indication of cerebral engorgements during the fits, the cerebro-spinal fluid being strongly forced out through the opening in the skull during the clonic stage, lightly distending the scalp and then gradually subsiding. At the age when hyperplasia of bone about the margin of the opening and complete ossification offered unyielding obstruction to further brain expansion, it was observed that the seizures came on with greater frequency and violence. At last she passed into status epilepticus, and died at the age of twenty-two. A. F.